

Spent Nuclear Fuels will be prepared and packaged, as necessary, for interim, dry-storage onsite, and shipped offsite for disposal in a national repository.

Key objectives of the year were to:

- restructure project plans and establish a new baseline schedule for moving spent fuel to interim storage, and resolve issues related to Tri-Party Agreement milestones
- continue progress in construction and procurement activities that support the Spent Fuel Goal.

***Spent Nuclear Fuel Technical Process: Once the Hanford Spent Nuclear Fuel Project's Canister Storage Building and Cold Vacuum Drying Facility are complete, fuel will be cleaned, repackaged, removed from the K Basins, dried, and transported to the Canister Storage Building for safe interim storage for up to 40 years. All of the technical elements must be in place before K Basins fuel removal can begin.***

Over the years, the basins have leaked contaminated water to the soil and groundwater. To protect the Columbia River and the surrounding environment, the spent fuel must be moved to an interim dry storage facility (currently under construction in Hanford's 200 Area), and ultimately to a national repository. The Spent Nuclear Fuel Project is one of Hanford's highest priorities.

RL is working with Project Hanford Management Contract firms to overcome the numerous complex technical and safety issues associated with moving spent fuel from the basins and into interim storage, and is committed to implementing safe and effective cleanup strategies.

In fiscal year 1998, significant progress was made in two areas: reducing risks to workers, the public, and the environment, and applying innovative technology.

One of the major accomplishments came in September 1998 as DOE reached an agreement with the Environmental Protection Agency that establishes a new baseline schedule for removing spent nuclear fuel from the K Basins.

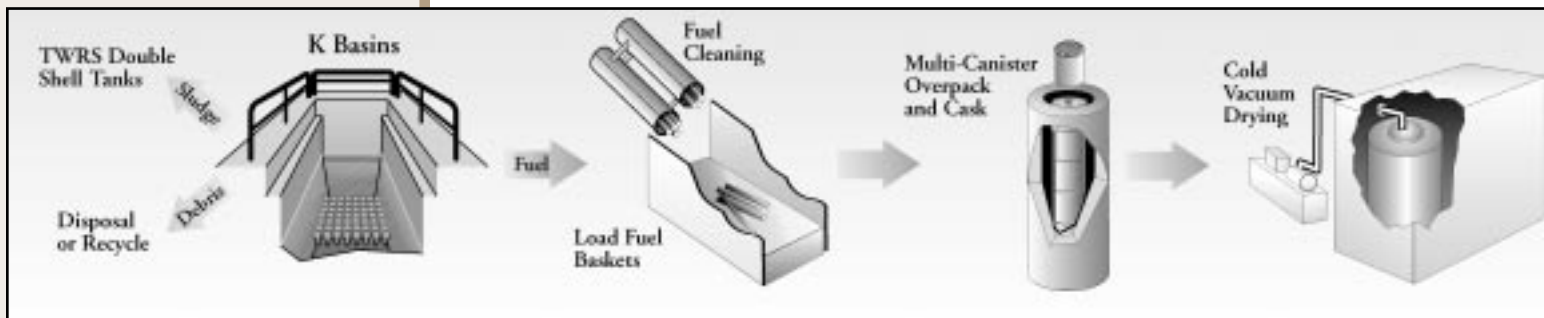
The agreement calls for the removal of spent fuel to begin at the K West Basin on November 30, 2000, and at the K East Basin one year later. Further, the pact establishes a milestone of December 31, 2003, for completion of fuel removal and sets July 31, 2007, as the completion date for K Basin cleanup, including removal of sludge, debris, and water, and deactivation of the basins.

The new baseline schedule sets the stage for risk reduction by providing a more realistic, workable schedule for cleanup activities and a framework for improving project and contractor performance.

Progress also was made in refining the technical process that will be used to

move, condition, and store the spent fuel. The Hot Conditioning System, one of the steps in the technical process, was eliminated after an analysis indicated that hot conditioning would not provide benefits commensurate with the risk associated with heating the spent fuel to a high temperature. And a technical strategy that will reduce radiation exposure to workers was adopted for loading and transporting sealed Multi-Canister Overpacks (MCOs), the special containers that will house the spent fuel during interim storage.

The steps of the technical process, in order, are: remove fuel assemblies from the existing canisters; clean the fuel; place the fuel into specially designed baskets; and insert the baskets into MCOs, which will be filled with water and shipped to the Cold Vacuum Drying Facility (CVDF), where they will be de-watered and vacuum dried. MCOs will then be sealed, leak tested, and transported to the Canister Storage Building (CSB), where they will remain in interim storage until final disposition is determined.





**Once the removal of spent fuel (above right) from the K Basins begins, transport systems composed of a truck, trailer, and cask will move the material to the processing facility and the CSB. Five truck-trailer transportation units were purchased and delivered in fiscal year 1998.**

### Innovative Technology Applications: Technical Process Progresses

Additional progress was made during fiscal year 1998 in facility construction and infrastructure development. The CSB was 76 percent complete (adjusted due to the new baseline) at the end of the fiscal year. In addition, the CVDF's outer structure is in place and work is proceeding on interior systems. Initial testing of CVDF process equipment, which will dry the spent fuel prior to delivery to the CSB, has been completed. Overall, the CVDF is 55 percent complete.

Advances were achieved in other steps of the technical process:

- Fabrication and testing of a Fuel Retrieval System manipulator, which will be used to remotely sort and transfer fuel elements from the basins to drying and storage containers, were completed.
- The Multi-Canister Overpack loading systems for both K West and K East basins were assembled and tested onsite. Testing was successful, allowing acceptance from the supplier.
- Thirty stainless steel fuel baskets that will hold the spent fuel in the MCOs were fabricated.

- An eddy current sensor was deployed that remotely—and relatively quickly—measured the thickness of the coating of aluminum hydroxide present on some spent fuel in the K Basins. The presence of aluminum hydroxide, depending on its thickness, could cause dry storage safety problems. Use of the sensor determined it would be possible to safely store the fuel without removing the coating, a finding that resulted in the closure of this technical issue.



**The exhaust stack was installed at the CSB in September 1998. The facility, which will store spent fuel from the K Basins, was 76 percent complete at the end of the fiscal year.**

## Accomplishments

- A new cost baseline and schedule were developed.
- Agreement was reached with regulators on Tri-Party Agreement milestones.
- The Canister Storage Building was 76 percent complete.
- A technical strategy, which will reduce radiation exposure to workers, was adopted for loading and transporting sealed Multi-Canister Overpacks.
- The Hot Conditioning System step for spent fuel processing was eliminated as unnecessary for safe storage.
- Initial testing of Cold Vacuum Drying Process equipment was completed.
- Fabrication and acceptance testing of the Fuel Retrieval System manipulator was completed.
- The implementation of new technical issues resolution processes has resolved major technical issues on or ahead of schedule.

## Near-Term Challenges

To meet the milestones of the new cost and baseline schedule, efforts must focus on resolving the remaining technical issues for spent fuel retrieval, processing, repackaging, and storage. In support of this work and other elements of the project, funding requirements must be addressed, and every effort must be made to reduce costs and improve productivity, while striving for operational excellence.

